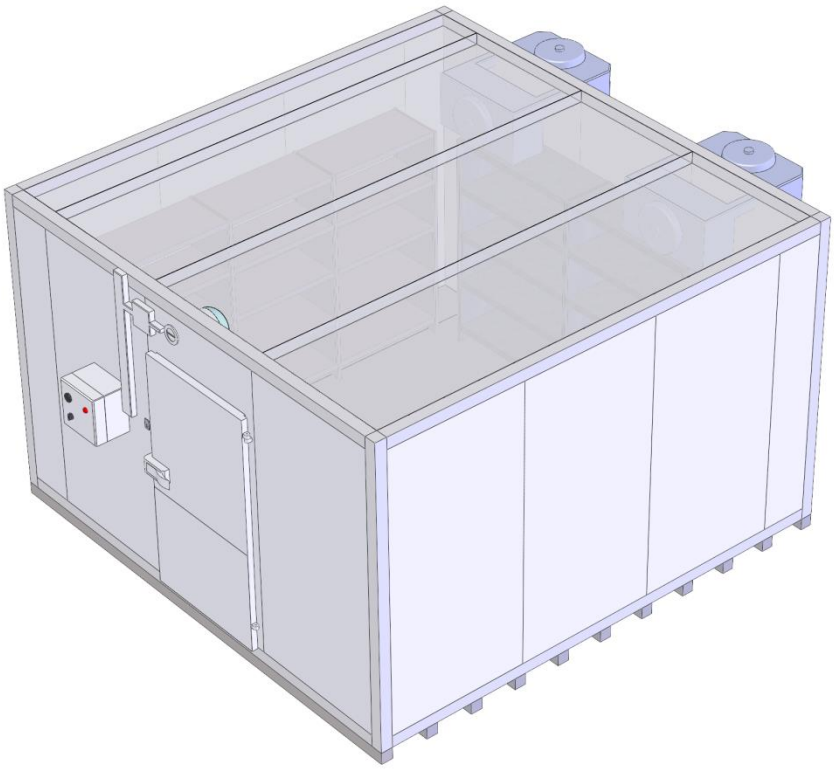
ZHENDRE

SOLUTIONS AUX CONDITIONS EXTRÊMES

INSTRUCTIONS AND USER MANUAL

WIF20 – WIC10/30/40 – WICWIF40

V00 – UNICEF ITB-DAN-2013-18562 | *01/06/2014*



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N/réf : 2014.07 Instructions & User Manual_UNICEF_ITB-DAN-2013-18562

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UPDATES

Version	Modification	Date	Modified by
V00	Creation of the document	01/06/2014	CLC

ANNEXES

- ANNEXE 1 : General plan
- ANNEXE 2 : Possible location of the refrigeration units
- ANNEXE 3 : Installation principle
- ANNEXE 4 : « Dagard » cold room installation instructions and assembly plans
- ANNEXE 5 : « Zanotti » refrigeration unit installation/operation instructions
- ANNEXE 6 : « Galvastock » shelving installation instructions
- ANNEXE 7 : WIF20 - WIC10/30/40 - WICWIF40 electrical diagram
- ANNEXE 8 : KT625 temperature recorder technical sheet
- ANNEXE 9 : Thermometer installation instructions

IMPORTANT: the UNICEF contract DAN-2013-18562 does include the Data logger and visual and sound alarm option if the set temperature is not respected.

1. SAFTEY INSTRUCTIONS

1.1. IMPORTANT WARNINGS

Please find below the safety recommendations which need to be followed when installing and using the machinery. They are intended for the user, but also for any operator performing maintenance or servicing the machine.

1. The installation of the machine must be carried out according to the diagrams and instructions provided by the (s) manufacturer (s).

2. The equipment must be used in accordance with the instructions and for the use intended by the manufacturer. Improper use of the machine signifies an abnormal condition and can damage the machine and represent a serious threat to human health.

3. The main hazard area is located in the condenser chamber, closed by awnings. Turn off the machine and isolate it for any maintenance and cleaning.

4. Any subsequent interventions should only be performed by personnel authorized to work on refrigeration systems, in accordance with the rules of the art of the profession. As such, they are informed of the risks inherent in the use of such equipment.

5. Opening electrical boxes and junction boxes is strictly reserved for qualified personnel due to the risk of electric shock or electrocution.

6. It is forbidden to operate the machine without the safety devices originally installed: electrical protection, switches, thermostats, fan grills, awnings protection ... These devices will be maintained in working condition and hazard notices will remain visible.

7. Detergents used during maintenance must be compatible with the constituent materials commonly used such as copper, steel, brass and the gaskets.

8. The unit must be subject to periodic inspections to verify operation under normal conditions of use and for any leakage.

9. In the case of a general power failure, beware of potential risks during the return of the power supply (involuntary start): no staff around hazardous areas.

10. An emergency stop on the refrigeration unit and power generator (if there is one) is obtained by pressing the red mushroom button on the facade of the refrigeration unit electrical box and shown by a label on a yellow background. **The emergency stop should be used only when necessary and not to perform the normal shutdown equipment.**

11. The unit must be protected against temperatures higher than stated on the nameplate (when in operation and storage).

12. All precautions will be taken at the approach of the piping to avoid breakage (fragile pipes) or burns (high compressor discharge temperature).

13. Although fluorocarbon based refrigerants are classified as non-hazardous fluids, be careful when working in direct contact or when you are near a place where it is used for the maintenance of your unit.

14. The refrigerating circuit contains fluorinated greenhouse gases covered by the Kyoto Protocol.

15. The refrigerants used in fluorocarbon refrigeration units or air conditioning can release toxic gas which in the presence of an open flame or an electrical short circuit, can cause severe irritation of the respiratory tract and may cause death. Always use caution when working with or near refrigerant fluid or air conditioning or refrigeration systems which contain refrigerant, particularly in enclosed or confined spaces.

16. It is forbidden to make any changes or alterations to the refrigerant circuit or its components.

17. If your installation is powered by a generator :

- End sure that it is properly earthed and is providing the correct power,
- Carburant fumes are highly toxic; only perform operations outside or in well ventilated areas.
- Do not put your face near the fuel tank cap to avoid aspiration of noxious fumes,
- Dispose of fuel correctly, do not disperse into the environment
- The liquid cooling circuit of the diesel engine is pressurised. Open the radiator cap very carefully once the engine has cooled,
- Do not clean the filter element with flammable solvents. Risk of explosion!

18. To comply with the Directive 2004/108/EC on electromagnetic compatibility in accordance with EN 61000-3-11 (ed.2000), the maximum permissible system impedance (Zmax) at the connection point of the electrical installation must be less than 0.162 Ω between phases.

19. The installer must ensure the network configuration (according to standards for electrical installations) and its compliance with the material (see the specifications of the hardware). Any other power than that specified is prohibited.

20. The machine maintenance must be performed by qualified personnel or by the manufacturer according to the provisions of the EN378 standard.

21. Take into consideration the hazard notices and take the necessary precautions for the human safety: designation and training of personnel capable of operating the machine.

1.2. PRECAUTIONS TO BE TAKEN WHEN MANIPULATING ELECTRICITY OR REFRIGERANT FLUID

1. Refrigerants evaporate rapidly by freezing everything that comes into contact with them. The following precautions should always be followed in case of contact with the refrigerant or refrigerating oil:

- **EYES:** immediately rinse eyes thoroughly under running water for at least 15 minutes keeping the eyelids open and call a doctor
- **SKIN:** Thoroughly rinse the affected area with tepid water and avoid contact with heat. Wrap burns in a thick, dry, sterile bandage to prevent infection. Call a doctor.
- **INHALATION:** Carry the victim outdoors and resuscitate if necessary. Stay with the victim until the arrival of emergency.
- **INGESTION:** Do not provoke vomiting. Contact the nearest anti-poison centre or a doctor immediately.

2. Behaviour in case of electrocution: Any staff having suffered an electric shock must be rescued as soon as possible. Your quick and accurate response will be the first key to success in the action you are taking.

- **PROTEGER:** Remove the victim from any electrical danger (cut the power, disconnect the plug, etc....) without endangering yourself.
- **ALERT:** the fire brigade, the emergency services (infirmary, first aid centre, etc…).
- **RESCUE:** aid should be given by a first aid rescue worker, holder of a first aid certificate or other personnel with a diploma in this field.

1.3. HAZARD NOTICES:

DANGER: indicates to personnel concerned that the described operation is a risk that may result in damage and serious or fatal injuries if it is not performed in compliance with the safety standards.

ELECTRICAL DANGER: indicates to personnel concerned that the described operation is an immediate risk that may result in damage and serious or fatal injuries if not performed in compliance with safety standards.

DANGER EXPLOSIVE MATERIAL : indicates to personnel concerned that the described operation entails a risk of explosion that may result in damage and serious or fatal injuries if not performed in compliance with the safety standards

DANGER SHARP MATERIAL: indicates to personnel concerned that the described operation can entail a risk of cuts.

DANGER HEAT: indicates to personnel concerned that the described operation presents an important source of heat that can cause injury or burns.

DANGER CORROSIVE MATERIAL : indicates to personnel concerned that the operation described entails a corrosive danger that may result in damage and serious or fatal injuries if not performed in compliance with safety standards

PROHITED: USE OF FLAME OR SMOKING: Indicates to personnel concerned that during the described operation it is forbidden to use an incandescent source close to the pictogram.

READ INSTRUCTIONS BEFORE USE

OBLIGATORY USE OF EYE PROTECTION: indicates to personnel concerned that the operation described poses a risk to the view and wearing a means of protection is mandatory.

RECYCLING: indicates to personnel concerned that the equipment marked with this symbol is wholly or partly recyclable.

DO NOT DISCARD IN THE BIN: Indicates to personnel concerned that the equipment marked with this symbol must not be disposed of in the dustbin due to the presence of lead.

2. RECEIPT OF EQUIPMENT

2.1. EQUIPMENT CHECK

At the reception, check the condition of the equipment.

In case of damage, express reservations to the carrier by registered letter within 48 hours (excluding delivery day and public holidays), and a copy to the company ZHENDRE by specifying the reference of the relevant equipment (see nameplate).

2.2. HANDLING

Unloading of the equipment must be made with the appropriate equipment (crane, forklift, ...).

When using a forklift, you must respect the position and direction of manipulation indicated on the products.

Handling must be done with caution to avoid any shock.

2.3. STORAGE

In case of storage medium or long term, observe the following rules:

Keep original packing,

Store material in a dry area or under cover.

2.4. WARRANTY

Refer to the commercial offer for information on the warranty (duration, ...).

Failure to comply with the recommendations listed in this document can cause canceling of all or part of the warranty.

Important: in addition to complying with this installation guide, follow the legal requirements of the country where the equipment is installed.

3. COLD ROOM INSTALLATION

3.1. INSTALLATION STEPS:

- Provide a general power supply excluding the ZH equipment (see appendix 7 – wiring diagrams) protected by a 30mA differential circuit breaker,
- Install the cold room equipment without the ceiling,
- Install the 2 refrigeration groups (1 on stand-by),
- Install the cold room ceiling,
- Fix the electrical panel and data recording device,
- Install the cable glands,
- Install the cold room accessories (interior lighting, locked-in personnel device, mushroom button, light switch, guttering, thermometer)
- Connect the electrical equipment,
- Connect the cables in the box to the electrical terminal (see diagram annexe 7),
- Connect to the main power supply,
- Test the operation,
- Put up the shelves and strip curtain
- Commission the installation.

3.2. PRELIMINARY INSTRUCTIONS:

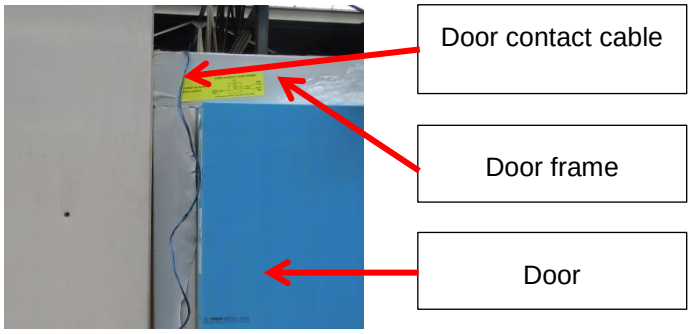
Before beginning the installation:

- Ensure that the concrete base on which the cold room is to be installed is flat and conforms to the recommended dimensions (see annex 1)
- Ensure that a general electrical power supply exists :
  - The general power supply must be installed by an authorised electrician.
  - The electrical protections for the general power supply are mandatory
  - Type of electrical protection:
    - 16A power supply curve D or 20A curve D (see appendix 7)
    - Protection by 30mA differential breaker
  - Electrical power supply rating :
    - 3-phase : 400V/3/50Hz+N+T 5x 2,5mm² (depending on the model of cold room),
    - Single phase: 230V/1/50Hz+T 3x2. 5mm² (WIC10).

3.3. INSTALL THE COLD ROOM WITHOUT THE CEILING

- To install the cold room please refer to the technical instructions « DAGARD N° 172 » and to the cold room assembly plan (see annexe 4),
- Do not install the cold room ceiling before installing the ZANOTTI refrigeration units.

NB: Do not forget the door strike cable (see annexe 4.2).



3.4. INSTALLING THE REFRIGERATION UNITS

- One of the refrigeration units will be used on standby, which will allow the first group to be removed in the event of a fault or maintenance.
- To install refrigeration units refer to the « ZANOTTI » technical instructions (see annexe 5).

NB: For the positioning of the refrigeration units, refer to annexe 2

COLD ROOM		VOLUME	REFRIGERATION GROUP
WIF 20 S0002241		20m3	BGM33002F 400V/3/50Hz + N + E
WIC10 S0002242		10m3	MGM11002F 230V/1/50Hz + N + E
WIC30 S0002240		30m3	MGM31502F 400V/3/50Hz + N + E
WIC40 S0002243		40m3	MGM32002F 400V/3/50Hz + N + E
WIC/WIF40 S0005048	WIC25	25m3	MGM21302F 400V/3/50Hz + N + E
	WIF15	15m3	BGM33002F 400V/3/50Hz + N + E

3.5. INSTALLING THE COLD ROOM CEILING

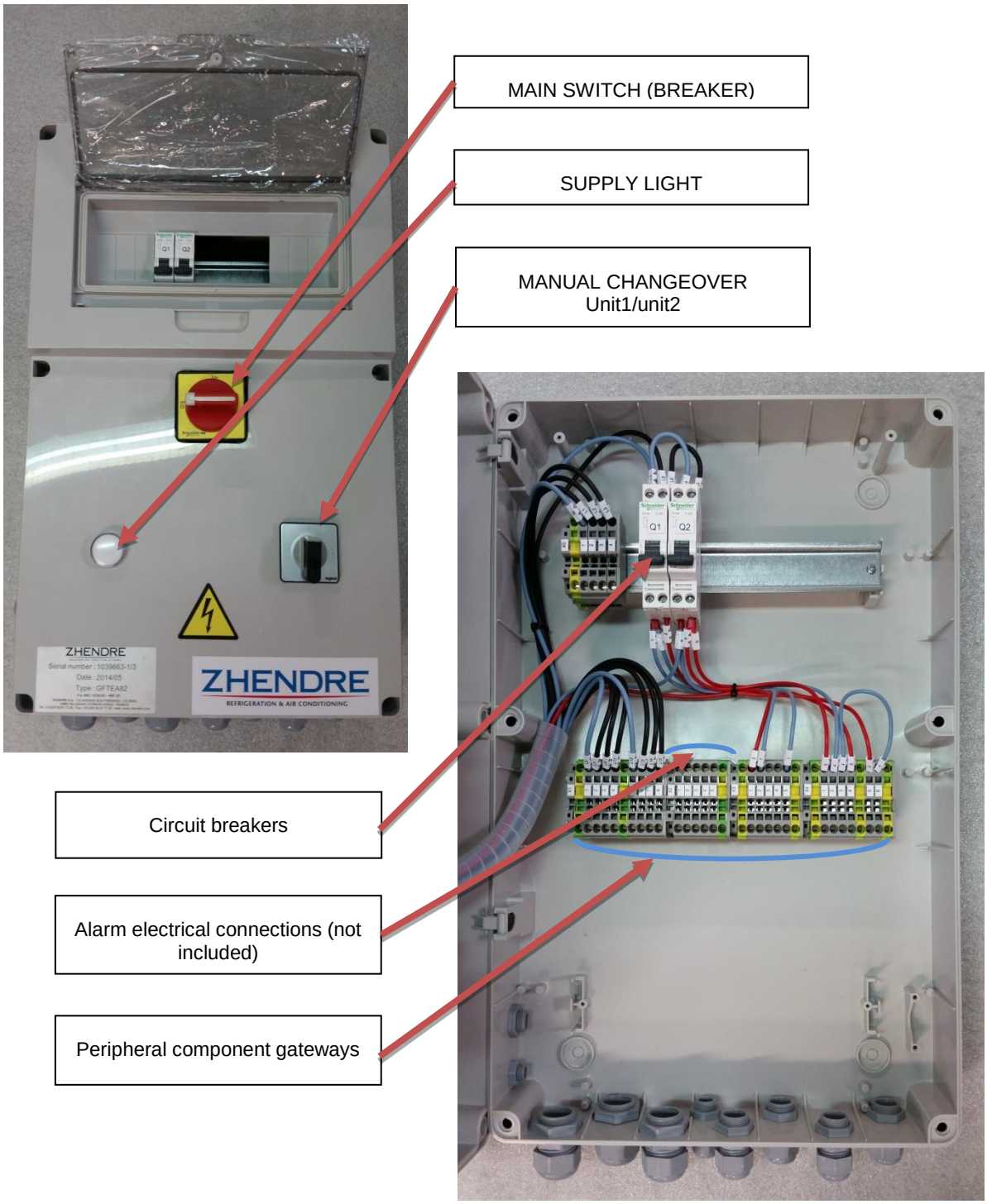
After installing the refrigeration units, check that they are properly positioned and install the ceiling of the DAGARD Cold Room. This must fit the facade panels exactly.

NB: To install the cold room ceiling see annexe « DAGARD N°172 » (annexe 4).

3.6. PRESENTATION OF THE CONTROL PANEL WIC10–30–40 / WIF20

This electrical panel groups:

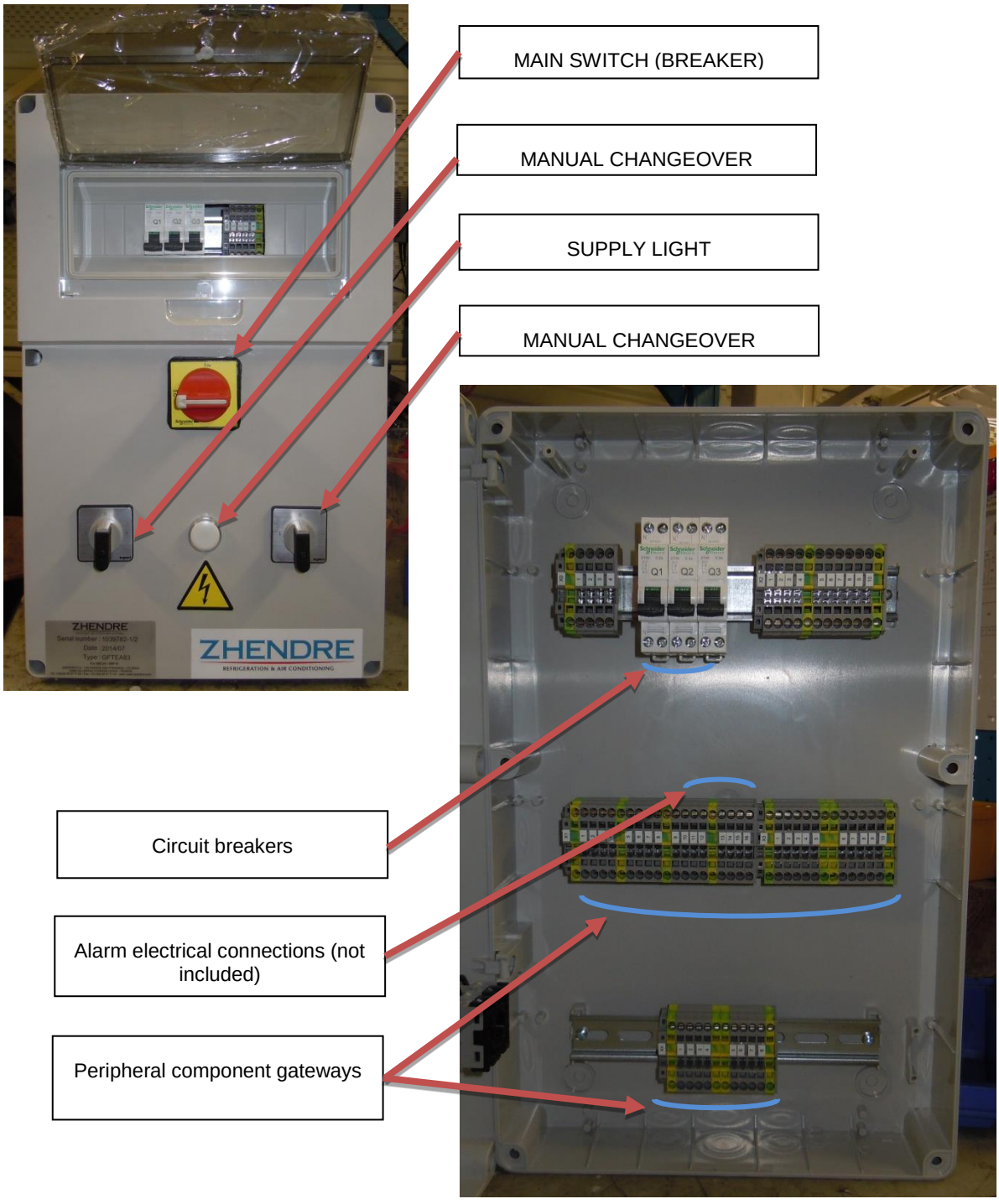
- Electrical security elements (circuit breaker, switch, and LED display light…),
- The manual permutation system of the refrigeration units



3.7. PRESENTATION OF THE ELECTRICAL PANEL WIC/WIF 40

This electrical panel groups:

- Electrical security elements (circuit breaker, switch, and LED display light…),
- The two manual refrigeration unit permutation systems: one for WIC25 and one for the WIF15.



3.8. PRESENTATION OF THE DICKSON RECORD DATA LOGGER

The data logger is made up of:

- The Dickson data recording system,
- The backup alarm to signal when advised temperature has been exceeded.

ACA46 data logger (tinted glass and toggle fasteners)

Data logger certificate of conformity

Temperature sensor extension 10m minimum

Data logger power cable

300 temperature recording discs: 0°C / ±50°C

DICKSON KT625 recorder

Power plug and socket

Temperature sensor (to connect to sensor extension)

12 pens

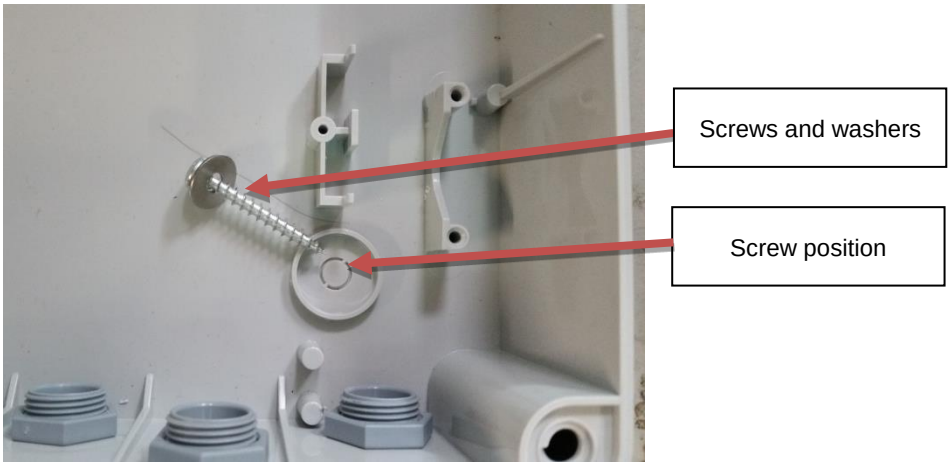
Electric plug adaptors

Case fixing brackets with self-drilling screws

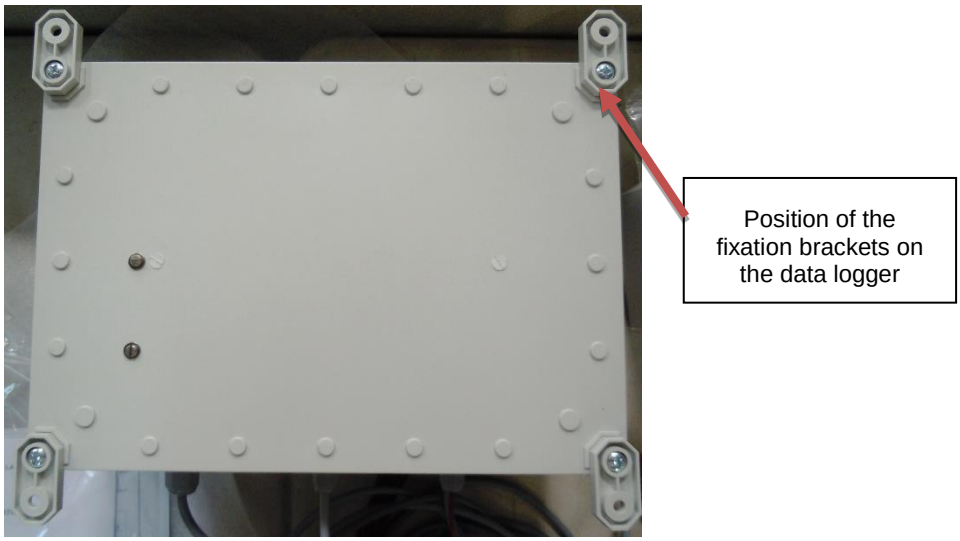
NB: the sensor must be fixed on the interior of the cold room, away from the doorway

3.9. INSTALLATION OF THE ELECTRIC PANEL (SEE ANNEXE 7, PAGE 3)

- Position the electric panel at approx. 1.2 m above ground in order to facilitate access.
- Fix the electric panel using the 4 auto-drilling screws and washers after having drills holes into the panel in the appropriate places.



- Turn the data logger over and then fix the 4 fixation brackets.



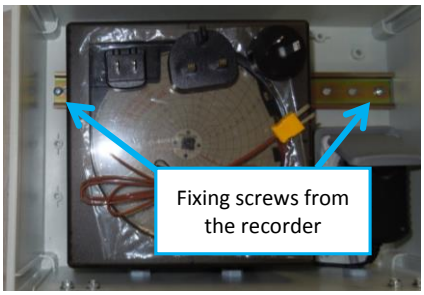
- Install the data logger using the 4 auto-drilling screws at approx. 1.2 m above ground in order to facilitate access.

- The recorder is factory set for a positive cold room. If it has to be used on a negative cold room follow this procedure:

Recorder setting KT625 DICKSON:

CAUTION: DO NOT PULL THE DICKSON BOX
RISK OF BREAKING LEGS HOLDING!

1. To access the rear of the recorder DICKSON, unscrew the 2 screws holding the DIN rail (see photo below).



2. Set pins as indicated below behind.
3. Insert the battery into place.
4. Reattach the recorder.

Recorder setting KT625 DICKSON:

At the start the recorder is set to operate in positive cold (0 ° C to 50 ° C) with discs 7 days.

For a negative cold room (WIF 20 and WIC / WIF 40), set the switch 5 on "down" and 6 on "up" positions.

DICKSON KT6 Dip Switch Settings: Up = On Down = Off					
Switches 2-6	**2**	**3**	**4**	**5**	**6**
7 Day	**D**				
24 Hour	**U**				
Fahrenheit		**D**			
Celsius		**U**			
-50 to 0°F/C			**D**	**D**	**U**
0 to +50°F/C			**D**	**U**	**D**
Remember to install the correct chart corresponding to your range					

Negative Cold Room

Positive Cold Room

Positive Cold Room

Negative Cold Room

- The temperature recorder also has an upper limit and a lower limit of temperature allowing to drive an alarm through a contactor. Follow the steps below for setup instructions.

Paramétrage de l'alarme du coffret enregistreur de température

ALARM – (KT623/25)

1. To set the alarm, make sure unit is on and press and hold the ALARM button. The LED will blink red rapidly for about five seconds, then the LED will turn solid green. Release the ALARM button and the LED will turn solid red. At this point the display will show the following: ON or OFF.
2. Pressing either the ADJUST-UP or ADJUST-DOWN buttons, located on the back of the unit next to the dip switch, will toggle the alarm on or off.
3. Pressing PEN HOME will scroll to the next alarm option. The options are as follows:
   a. alarm on or off
   b. pen 1 alarm min
   c. pen 1 alarm max
4. In order to set pen alarm minimums and maximums, pressing ADJUST-UP will increase the alarm value, and pressing ADJUST-DOWN will decrease the alarm value. There is acceleration if the ADJUST-UP button is held down. Repetitively pressing the PEN HOME button will scroll through the five options until the alarm button is pressed to exit from alarm adjust. Each press of the PEN HOME or ALARM button will store the new settings. The unit will take one minute to exit Alarm Set Mode once the ALARM button is pressed.
5. If the alarm is triggered, the LED will show as solid red and the alarm will sound. Press the ALARM button to silence Audible Alarm.

3.10. INSTALLATION OF THE COLD ROOM ACCESSORIES

Install each accessory according to the plan provided (see annexe 3).

List of accessories:

- Seal-tight portholes : 1 or 2 on the inside (depending on model of cold room),
- Manual/auto light switch,
- Locked-in personnel alarm (CAPE),
- Supplementary mushroom button (only for WIC/WIF40 model),

- Clock thermometer :

Fixation

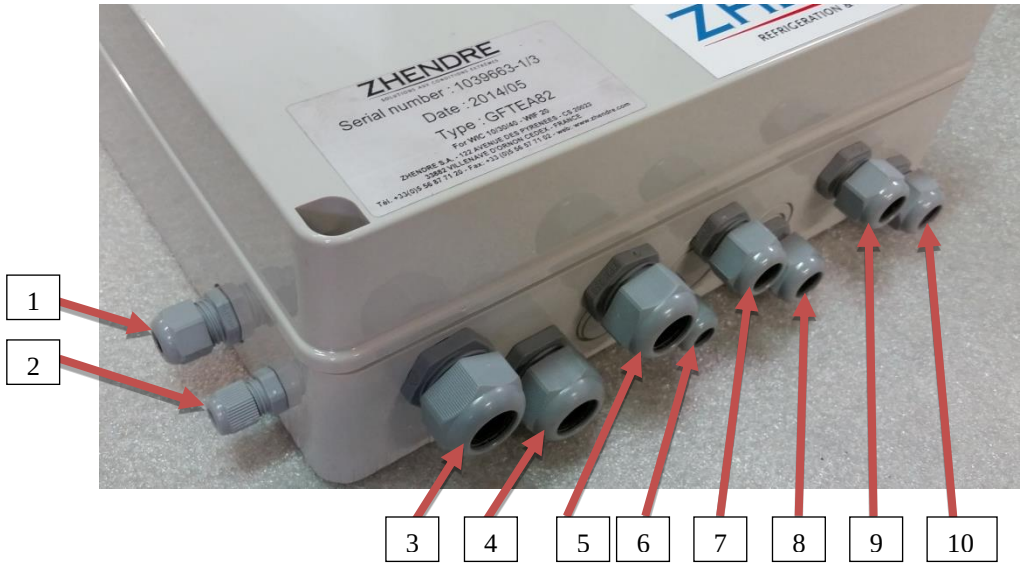
NB: Be extra careful not to break the capillaries when unravelling them (see annexe 13).

- Front discharge chute (adjacent to the electrical panel and the data logger),
- Mounting bases (electrical cable and outflow),

3.11. CONNECTING ALL ELECTRICAL EQUIPMENT

The connection of accessories and refrigeration units on the panel is made through terminal blocks at the bottom of the table. Each power cable must pass through an independent cable gland following the diagram below. Please refer to Appendix 7 for the wiring diagram.

PANEL WIF20 - WIC10/30/40 (GFTEA82)



For WIF20 - WIC10/30/40:

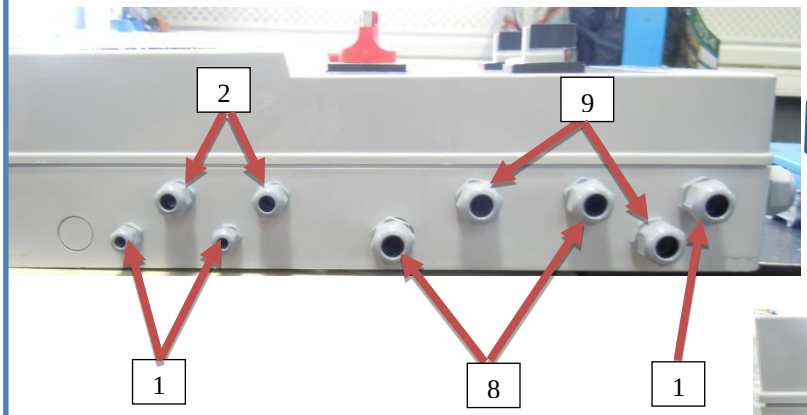
⊙ data logger power cable (W7)	N°1	PE ISO 16
⊙ contact cable for temperature excess (W9)	N°2	PE ISO 12
⊙ general electrical cable (W1)	N°3	PE ISO 25
⊙ UNIT 1 electrical cable (W2)	N°4	PE ISO 25
⊙ UNIT 2 electrical cable (W3)	N°5	PE ISO 25
⊙ contact cable for temperature excess (exit)	N°6	PE ISO 16
⊙ switch cable (W4)	N°7	PE ISO 20
⊙ lighting cable (W5)	N°8	PE ISO 20
⊙ door contact cable (W10)	N°9	PE ISO 20
⊙ locked-in personnel alarm cable (W8)	N°10	PE ISO 20

For WIF20 only:

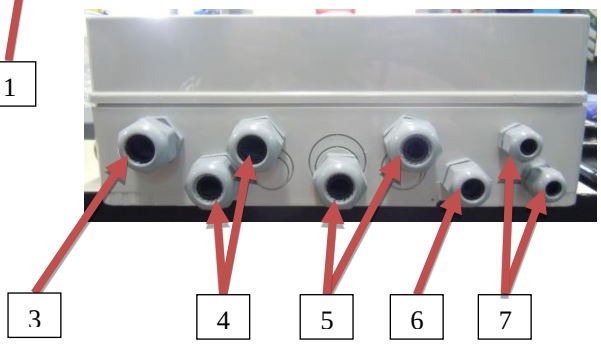
Door heater and compression valve cable (Cable gland supplied but not pre-installed)	PE ISO 20

PANEL WIC/WIF 40 (GFTEA83)

Side view



View from below



contact cable for temperature excess. (W6 and W7)	N°1	PE ISO 12
door contact cable (W8 and W9)	N°2	PE ISO 16
general electrical cable (W1)	N°3	PE ISO 25
power cable positive refrigeration group (W2 and W3)	N°4	PE ISO 25
power cable negative refrigeration group (W4 and W5)	N°5	PE ISO 25
door heater and valve cable (W14)	N°6	PE ISO 20
data logger power cable (W15 and W16)	N°7	PE ISO 16
switch cable (WIC25 => W10 and WIF15 => W12)	N°8	PE ISO 20
lighting cable (WIC25 => W11 and WIF15 => W13)	N°9	PE ISO 20
locked-in personnel alarm cable (W17)	N°10	PE ISO 20

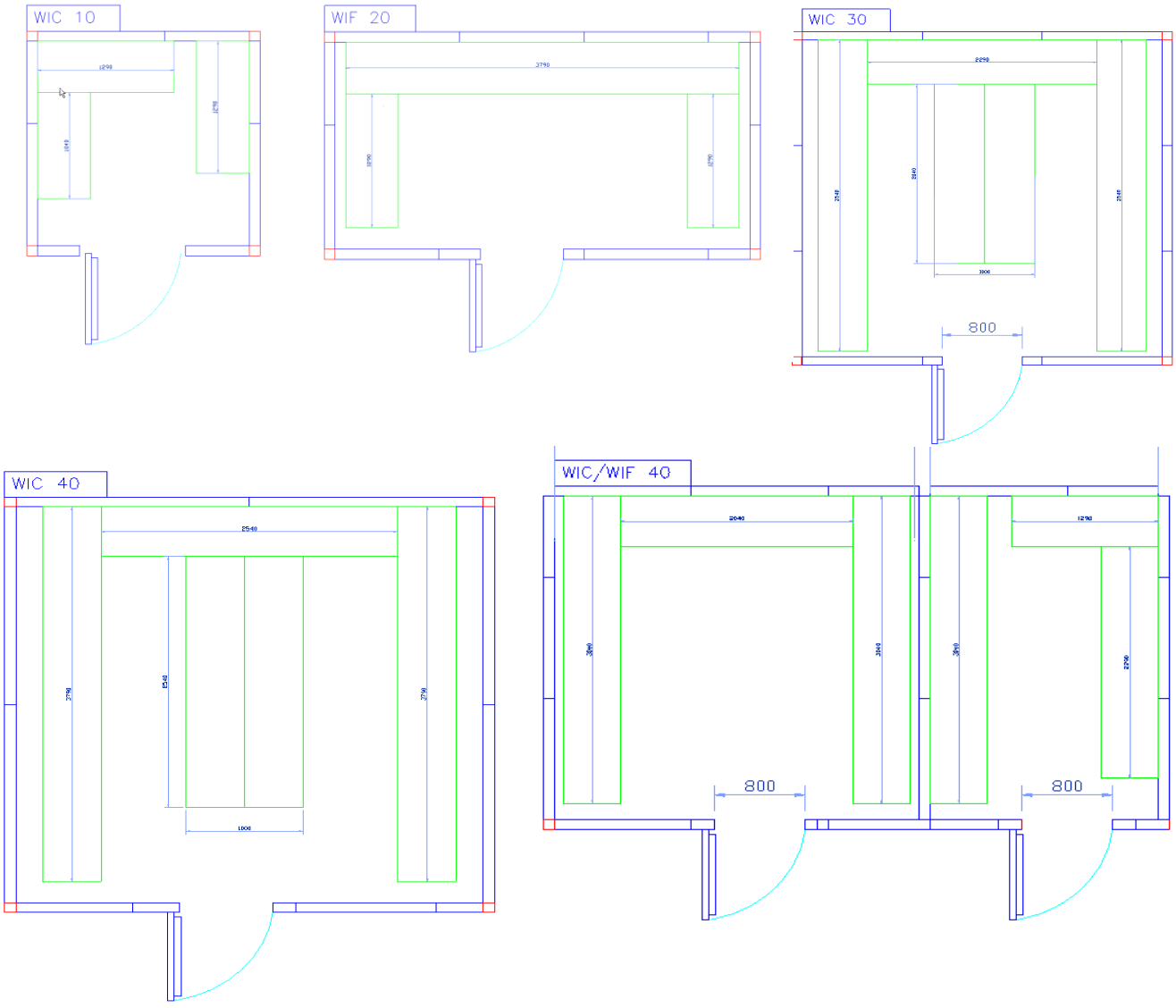
Before switching on the power:

- Attach the cables using the supplied attachment accessories (collars with bases, conduits…),
- Check each connection,
- Refer to the installation diagram to connect the cables.

3.12. INSTALLING THE SHELVES AND STRIP CURTAIN

To install the shelves and split curtain, see appendix 6.

Principle mounting shelves:



4. COMMISSIONING

Before commissioning, check each step performed in the previous chapters.

NB: before doing anything to the electrical panel or any connection, Carefully read the SAFETY INSTRUCTIONS

4.1. STEPS TO FOLLOW FOR COMMISSIONING

- Set the S1 switch on the control panel on « UNIT1 »,
- Ensure that all motorised fans rotate freely,
- Set the differential breaker for the general power supply to « ON »,
- Ensure that the « supply light » is on,
- Set the electronic controller positioned on the refrigeration unit N°1 **(see annexe 5)**,
- Set the temperature at +4°C for the positive unit and -20°C for the negative unit,
- Press the ON/OFF button on the refrigeration unit regulator,
- Refrigeration unit n°1 starts up when it needs to be colder,
- Ensure that the emergency stop button inside the cold room is working properly,
- Check that the lighting inside as well as outside the cold room is working properly.
- Set the « Manuel Change over Switch » to « UNIT2 » in order to test that that refrigeration unit 2 is functioning correctly (in the event that refrigeration unit 1 is malfunctioning or requires maintenance),
- Press the ON/OFF button on the refrigeration unit regulator,
- Configure the electronic regulator located under refrigeration UNIT 2 **(see annexe 5)**,
- Set the temperature to +4°C for the positive unit and -20°C for the negative unit.

4.2. REFRIGERATION UNIT OPERATION

The entire system is controlled by a Zanotti regulator located on the front of the refrigeration units. The regulator permanently displays the temperature of the cold room. To adjust the set point, the manual start-up of the de-icing cycle or any other parameter changes, refer to the regulator operating instructions at the end of the manual.

4.2.1. IN SERVICE

When the regulator set point is reached, the regulator opens and cuts the power to the refrigeration unit.

4.2.2. DE-ICING

- In positive and negative refrigeration units, ice accumulates on the evaporator.
- It is automatically removed every eight to twelve hours (depending on setting) by an electrical de-icer on the evaporator, controlled by the regulator. The de-icing range can be adjusted by the installer or maintenance technician if the factory setting does not provide optimum evaporator de-icing (see appendix 5).
- During this phase, an LED lights up on the front of the de-icing sign on the regulator.
- Once the ice has melted, the water drains for 3 minutes. The de-icing LED, which was lit, flashes during the drain phase. The refrigeration unit restarts. To avoid water splashes inside the room, the evaporator fan restarts five minutes later (timer).
- To consult the factory settings, refer to chapter 8 in the annex «Zanotti» (see documentation supplied with the groups).

5. STOPPING PROCEDURE

- Press the ON/OFF button on the regulator located on the refrigeration unit which is working.
- For any maintenance or intervention on electrical or mechanical parts, lock down the installation by switching off main breaker.

Clarification on the locked-in personnel alarm: A box containing a pushbutton and a white indicator light is located inside the cold room beside the door. The white indicator light remains permanently lit to allow the box to be seen in the event of a power cut or if someone accidentally turns out the light.

6. TROUBLE SHOOTING

Problem	Checks (possible causes)	Solutions
Switch on light H4 does not light	- Check the main power supply - Check the circuit breaker Q2 - Check that the main switch is in position 1	Lock down the installation and check whether the main breaker switch has been tripped. If it is, find the cause and repair the problem before switching the power back on.
The lights do not light up.	- Check the main power supply - Check the circuit breaker Q1 - Check that the main switch is in position 1	Lock down the installation and check whether the main breaker switch has been tripped. If it is, find the cause and repair the problem before switching the power back on.
When setting the switch to position «UNIT 1» or position «UNIT 2», nothing happens.	- Check that the power mode is correct. - Check that the refrigeration units are ON	Lock down the installation and check whether the main breaker switch has been tripped. If it is, find the cause and repair the problem before switching the power back on.
The cold room temperature does not decrease.	- Check that the door is closed properly - Check the frost level on the evaporator - Check the alarm signals to the controller Zanotti refrigeration units.	- Perform a manual defrost - Check the Zanotti technical installation manual.

7. MAINTENANCE AND SERVICING

NB: Before any maintenance or servicing, read the SAFETY INSTRUCTIONS carefully.

- Equipment inspection and maintenance must be preceded by a full SHUTDOWN PROCEDURE and:
  - at each commissioning
  - every month while it is in service
  - when the equipment is shut down
- Check that the condenser is clean and is not obstructed. Clean it if necessary.
- The manual valves must be handled only by maintenance personnel with the necessary skills (risk of fluid being ejected under pressure).

- Any operation other than the ongoing maintenance operations described in the user guide must be performed by a refrigeration technician with the necessary skills.
- The maintenance technician must not underestimate the risks mentioned, and in particular must guard against an accidental power surge, involuntary or not, after the power to the machine is switched off. This is especially important when parts are being replaced or adjustments are being made.
- At its end of life, the machine should be scrapped by an installer authorised to recycle the refrigerant contained in the cooling circuit.

NB: This is not part of ongoing maintenance. For any visible defect, contact a professional refrigeration specialist.

8. HOW TO CONNECT AN ALARM

It is possible to connect a visual and acoustic alarm system (not supplied) using contacts waiting in the electrical box.

- For the cold room WIF20/WIC10/WIC30/WIC40 connection can be made:
  - On X2-1 and X2-2 terminals for temperature alarm and X2-3 and X2-4 terminals for the door contact.
- For the cold room WIF/WIF 40 connection can be done:
  - For WIC25: On X2-1 and X2-2 terminals for temperature alarm and X2-5 and X2-6 for the door contact.
  - For WIC15: On X2-3 and X2-4 terminals for temperature alarm and X2-8 and X2-9 for the door contact.

NOTE: The alarm signal will be relayed and timed to avoid false alarms.